SPEC® CFP2006 Result
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Dell Inc.

PowerEdge M610 (Intel Xeon E5504, 2.00 GHz)

$SPECfp^{®}2006 =$ 23.8

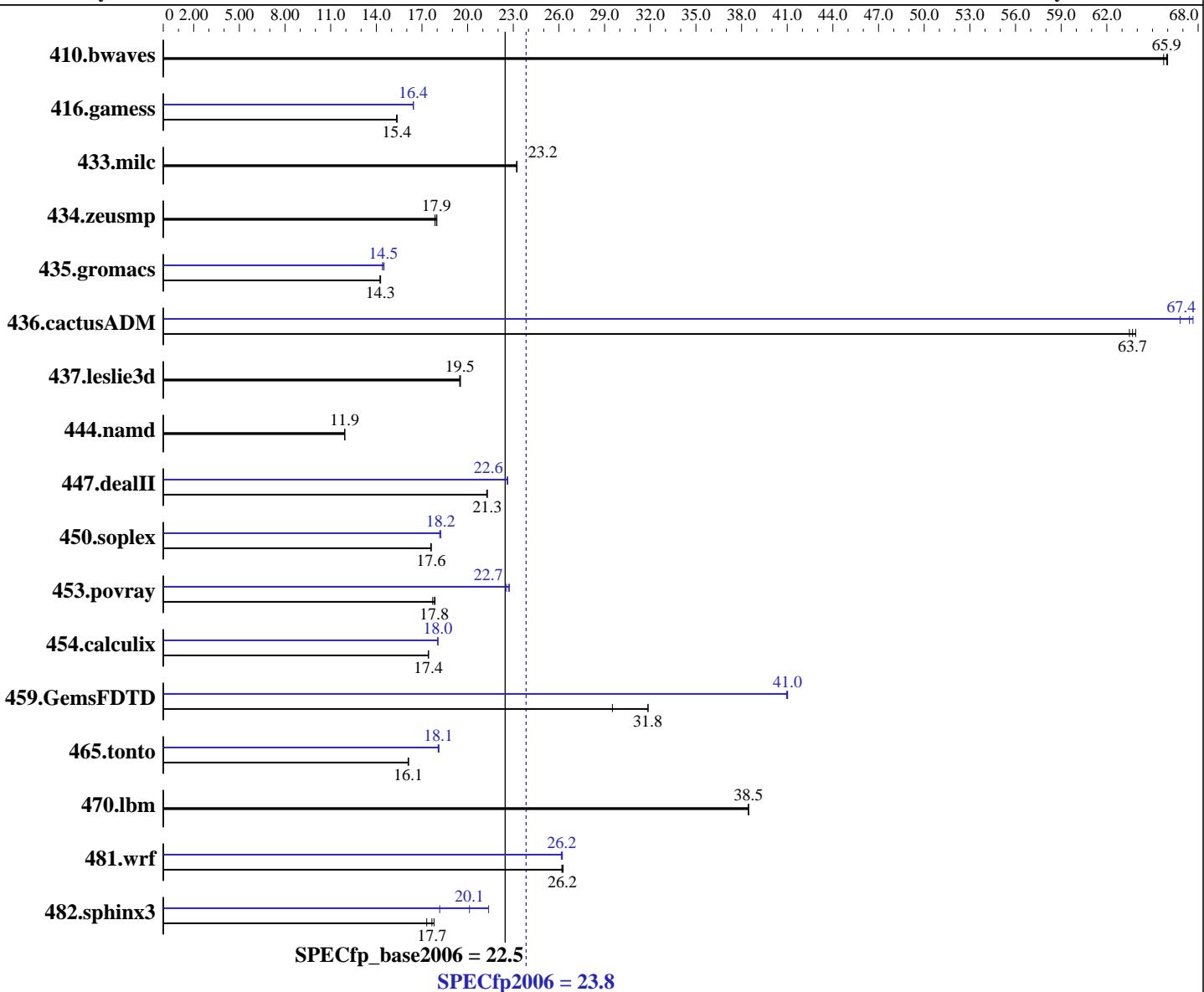$SPECfp\_base2006 =$ 22.5

CPU2006 license: 55
Test sponsor: Dell Inc.
Tested by: Dell Inc.

Test date: Apr-2009
Hardware Availability: Mar-2009
Software Availability: Mar-2009

Benchmark	base	peak
410.bwaves	65.9	
416.gamess	15.4	16.4
433.milc	23.2	
434.zeusmp	17.9	
435.gromacs	14.3	14.5
436.cactusADM	63.7	67.4
437.leslie3d	19.5	
444.namd	11.9	
447.dealII	21.3	22.6
450.soplex	17.6	18.2
453.povray	17.8	22.7
454.calculix	17.4	18.0
459.GemsFDTD	31.8	41.0
465.tonto	16.1	18.1
470.lbm	38.5	
481.wrf	26.2	26.2
482.sphinx3	17.7	20.1

SPECfp_base2006 = 22.5
SPECfp2006 = 23.8

Hardware

CPU Name: Intel Xeon E5504
CPU Characteristics:
CPU MHz: 2000
FPU: Integrated
CPU(s) enabled: 8 cores, 2 chips, 4 cores/chip
CPU(s) orderable: 1,2 chips
Primary Cache: 32 KB I + 32 KB D on chip per core
Secondary Cache: 256 KB I+D on chip per core
Continued on next page

Software

Operating System: SUSE Linux Enterprise Server 10 (x86_64) SP2, Kernel 2.6.16.60-0.21-smp
Compiler: Intel C++ and Fortran Compiler Professional 11.0 for Linux
Build 20090131 Package ID: l_cproc_p_11.0.080, l_cprof_p_11.0.080
Auto Parallel: Yes
File System: ReiserFS
System State: Run level 3 (multi-user)
Continued on next page

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L3 Cache:	4 MB I+D on chip per chip	Base Pointers:	64-bit
Other Cache:	None	Peak Pointers:	32/64-bit
Memory:	24 GB (6 x 4 GB DDR3-1066 DR RDIMM downclocked to 800 MHz)	Other Software:	Binutils 2.18.50.0.7.20080502
Disk Subsystem:	1 x 146 GB 10000 RPM SAS		
Other Hardware:	None		

Results Table

Benchmark	Base						Peak					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	**206**	**65.9**	206	66.0	207	65.7	**206**	**65.9**	206	66.0	207	65.7
416.gamess	1277	15.3	**1275**	**15.4**	1275	15.4	**1192**	**16.4**	1191	16.4	1192	16.4
433.milc	395	23.2	395	23.2	**395**	**23.2**	395	23.2	395	23.2	**395**	**23.2**
434.zeusmp	510	17.8	**507**	**17.9**	506	18.0	510	17.8	**507**	**17.9**	506	18.0
435.gromacs	**501**	**14.3**	501	14.2	500	14.3	**493**	**14.5**	496	14.4	492	14.5
436.cactusADM	188	63.5	187	63.9	**188**	**63.7**	177	67.7	179	66.8	**177**	**67.4**
437.leslie3d	**482**	**19.5**	483	19.5	481	19.5	**482**	**19.5**	483	19.5	481	19.5
444.namd	**673**	**11.9**	673	11.9	672	11.9	**673**	**11.9**	673	11.9	672	11.9
447.dealII	537	21.3	538	21.3	**537**	**21.3**	506	22.6	505	22.6	**505**	**22.6**
450.soplex	474	17.6	475	17.6	**474**	**17.6**	459	18.2	457	18.2	**458**	**18.2**
453.povray	298	17.9	**299**	**17.8**	300	17.7	236	22.6	**234**	**22.7**	234	22.7
454.calculix	474	17.4	473	17.4	**473**	**17.4**	457	18.0	**457**	**18.0**	457	18.0
459.GemsFDTD	360	29.5	**333**	**31.8**	333	31.9	259	41.0	**259**	**41.0**	259	41.0
465.tonto	610	16.1	**611**	**16.1**	612	16.1	543	18.1	**544**	**18.1**	545	18.1
470.lbm	357	38.5	357	38.5	**357**	**38.5**	357	38.5	357	38.5	**357**	**38.5**
481.wrf	425	26.3	426	26.2	**426**	**26.2**	426	26.2	427	26.2	**426**	**26.2**
482.sphinx3	1095	17.8	**1104**	**17.7**	1126	17.3	1073	18.2	912	21.4	**969**	**20.1**

Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

General Notes

```
    OMP_NUM_THREADS set to number of cores
    KMP_AFFINITY set to granularity=fine,scatter
    KMP_STACKSIZE set to 200M
```

Base Compiler Invocation

C benchmarks:
```
    icc
```

C++ benchmarks:
```
    icpc
```

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Base Compiler Invocation (Continued)

Fortran benchmarks:
```
ifort
```

Benchmarks using both Fortran and C:
```
icc ifort
```

Base Portability Flags

```
    410.bwaves: -DSPEC_CPU_LP64
    416.gamess: -DSPEC_CPU_LP64
      433.milc: -DSPEC_CPU_LP64
    434.zeusmp: -DSPEC_CPU_LP64
   435.gromacs: -DSPEC_CPU_LP64 -nofor_main
  436.cactusADM: -DSPEC_CPU_LP64 -nofor_main
    437.leslie3d: -DSPEC_CPU_LP64
      444.namd: -DSPEC_CPU_LP64
     447.dealII: -DSPEC_CPU_LP64
     450.soplex: -DSPEC_CPU_LP64
     453.povray: -DSPEC_CPU_LP64
    454.calculix: -DSPEC_CPU_LP64 -nofor_main
   459.GemsFDTD: -DSPEC_CPU_LP64
      465.tonto: -DSPEC_CPU_LP64
       470.lbm: -DSPEC_CPU_LP64
       481.wrf: -DSPEC_CPU_LP64 -DSPEC_CPU_CASE_FLAG -DSPEC_CPU_LINUX
    482.sphinx3: -DSPEC_CPU_LP64
```

Base Optimization Flags

C benchmarks:
```
    -xSSE4.2 -ipo -O3 -no-prec-div -static -parallel -opt-prefetch
```

C++ benchmarks:
```
    -xSSE4.2 -ipo -O3 -no-prec-div -static -parallel -opt-prefetch
```

Fortran benchmarks:
```
    -xSSE4.2 -ipo -O3 -no-prec-div -static -parallel -opt-prefetch
```

Benchmarks using both Fortran and C:
```
    -xSSE4.2 -ipo -O3 -no-prec-div -static -parallel -opt-prefetch
```

Peak Compiler Invocation

C benchmarks (except as noted below):
```
    icc
```

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CPU2006 license: 55		**Test date:**	Apr-2009
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Tested by:	Dell Inc.	**Software Availability:**	Mar-2009

Peak Compiler Invocation (Continued)

    482.sphinx3: `icc -m32`

C++ benchmarks (except as noted below):
    `icpc`

    450.soplex: `icpc -m32`

Fortran benchmarks:
    `ifort`

Benchmarks using both Fortran and C:
    `icc ifort`

Peak Portability Flags

    410.bwaves: `-DSPEC_CPU_LP64`
    416.gamess: `-DSPEC_CPU_LP64`
      433.milc: `-DSPEC_CPU_LP64`
    434.zeusmp: `-DSPEC_CPU_LP64`
    435.gromacs: `-DSPEC_CPU_LP64 -nofor_main`
    436.cactusADM: `-DSPEC_CPU_LP64 -nofor_main`
    437.leslie3d: `-DSPEC_CPU_LP64`
      444.namd: `-DSPEC_CPU_LP64`
     447.dealII: `-DSPEC_CPU_LP64`
     453.povray: `-DSPEC_CPU_LP64`
    454.calculix: `-DSPEC_CPU_LP64 -nofor_main`
    459.GemsFDTD: `-DSPEC_CPU_LP64`
     465.tonto: `-DSPEC_CPU_LP64`
      470.lbm: `-DSPEC_CPU_LP64`
       481.wrf: `-DSPEC_CPU_LP64 -DSPEC_CPU_CASE_FLAG -DSPEC_CPU_LINUX`

Peak Optimization Flags

C benchmarks:

    433.milc: `basepeak = yes`

    470.lbm: `basepeak = yes`

    482.sphinx3: `-xSSE4.2 -ipo -O3 -no-prec-div -static -unroll2`

C++ benchmarks:

    444.namd: `basepeak = yes`

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Peak Optimization Flags (Continued)

```
   447.dealII: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
              -no-prec-div(pass 2) -static(pass 2) -prof-use(pass 2)
              -unroll2 -ansi-alias -scalar-rep- -opt-prefetch

   450.soplex: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
              -no-prec-div(pass 2) -static(pass 2) -prof-use(pass 2)
              -opt-malloc-options=3

   453.povray: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
              -no-prec-div(pass 2) -static(pass 2) -prof-use(pass 2)
              -unroll4 -ansi-alias
```

Fortran benchmarks:

```
   410.bwaves: basepeak = yes

   416.gamess: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
              -no-prec-div(pass 2) -static(pass 2) -prof-use(pass 2)
              -unroll2 -Ob0 -ansi-alias -scalar-rep-

   434.zeusmp: basepeak = yes

   437.leslie3d: basepeak = yes

  459.GemsFDTD: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
              -no-prec-div(pass 2) -static(pass 2) -prof-use(pass 2)
              -unroll2 -Ob0 -opt-prefetch -parallel

    465.tonto: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
              -no-prec-div(pass 2) -static(pass 2) -prof-use(pass 2)
              -unroll4 -auto
```

Benchmarks using both Fortran and C:

```
  435.gromacs: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
              -no-prec-div(pass 2) -static(pass 2) -prof-use(pass 2)
              -opt-prefetch -auto-ilp32

 436.cactusADM: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
              -no-prec-div(pass 2) -static(pass 2) -prof-use(pass 2)
              -unroll2 -opt-prefetch -parallel -auto-ilp32

  454.calculix: -xSSE4.2 -ipo -O3 -no-prec-div -static -auto-ilp32

      481.wrf: -xSSE4.2 -ipo -O3 -no-prec-div -static -opt-prefetch
              -parallel -auto-ilp32
```

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The flags file that was used to format this result can be browsed at

`http://www.spec.org/cpu2006/flags/Intel-icl1.0-fp-linux64-revA.20090710.04.html`

You can also download the XML flags source by saving the following link:

`http://www.spec.org/cpu2006/flags/Intel-icl1.0-fp-linux64-revA.20090710.04.xml`

For questions about this result, please contact the tester.
For other inquiries, please contact webmaster@spec.org.

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